SM712

Mobile Computer Display Controller

Overview

The LynxEM+ integrates Silicon Motion's unique multimedia features into an MCB solution. The LynxEM+ includes 2MB and 4MB of video memory within a single footprint. This powerful single footprint solution, when combined with SMI's Virtual Refresh™ architecture provides a complete video subsystem which consumes very little power.

The LynxEM+ offers enhanced capabilities for dual viewing and for handling dual applications. Through its Virtual Refresh architecture, the LynxEM+ can simultaneously drive LCD/CRT and LCD/TV display combinations. Each display can support independent full-screen full-motion video, as well as independent graphic refresh rates, resolutions, and color depths. The LynxEM+ can display slides on a TV/CRT with attached speaker notes presented on an LCD display that is invisible to an audience. For a dual application experience, a spreadsheet can be displayed on an LCD as a word-processing application or web browser is displayed on a CRT. Dual-view and dual application support is provided under Windows 95, Windows 98, Windows NT, and Windows 2000.

Key Features

- Supports PCI bus

- 135 MHz RAMDAC support 1024×768 resolution

- Supports 18/24-bit TFT panel and 8/12-bit CSTN panel

- 128-bit 2D graphic engine

- 4MB embedded SDRAM

- Supports two 8-bit ports or one 16-bit port/ITU601 ZV capture port

- Power consumption < 500mW

The LynxEM+ has three separate Phase Lock Links (PLLs) that allow flexible control of functional blocks within the device. A robust 2D Drawing Engine supports three ROPs, BitBLT, transparent BLT, pattern BLT, color expansion, and line drawing. The Host Interface Unit is PCI 2.1 compliant and supports bus mastering. The Power-down Control Unit combined with Dynamic Power Management provides individual block shutdown capability and complete Standby and Suspend support. A VGA Core, LCD Backend Controller and 135 MHz RAMDAC are also incorporated.

The LynxEM+'s Concurrent Video Processor and Video Capture Unit provide superior video quality for real-time video capture and playback. The LynxEM+'s Video Processor supports multiple independent full screens and full-motion video windows with overlay. Each motion video window uses YUV-to-RGB conversion, scaling, and color interpolation. When combined with chip dual view capabilities, these independent video streams can be output to separate displays and bilinearly scaled to support applications such as full-screen display of local and remote images for video conferencing.

The LynxEM+ is designed with 0.35m, Transaction Level Model (TLM), 3.3V CMOS process technology. A hierarchical layout approach provides enhanced internal timing control. In addition to built-in test modes and a signature analyzer, the LynxEM+ incorporates a 20-bit test bus designated as the TD Bus. The TD bus can be utilized to simultaneously monitor 20 internal signals from 8 functional blocks through the Zoom Video (ZV) Port Interface. The capability increases fault coverage, and reduces silicon validation and debugging time. The LynxEM+ is available in a 256 BGA package.
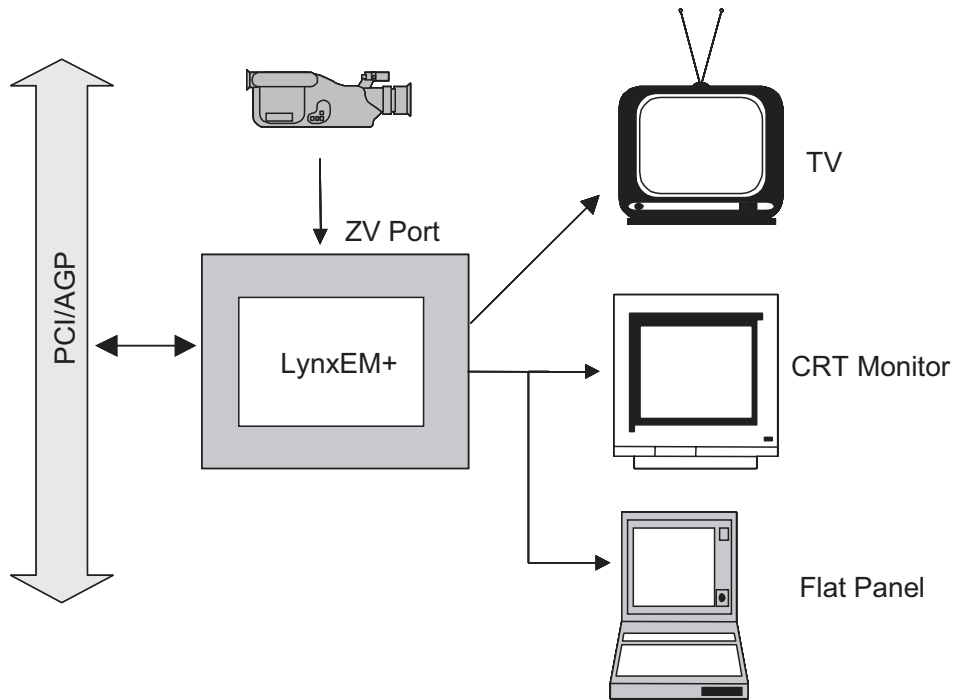
Applications

- Thin client
- UMPC
- Notebook
- Medical patient monitors
- Embedded product monitors

- Education machine
- Surveillance
- IPC
- Signage

Packaging

- 256-pin BGA

SM712 Block Diagram

PCI/AGP

ZV Port

LynxEM+

TV

CRT Monitor

Flat Panel

SiliconMotion

www.siliconmotion.com